

**MODIFICATIONS TO SECTION 7, FIELD SAMPLING PLAN,
OF THE PHASE I RFI/RI WORK PLAN FOR OPERABLE UNIT 7,
PRESENT LANDFILL**

January, 1993

Prepared by EG&G Rocky Flats, Remediation Programs Division
for The Department of Energy, Rocky Flats Office

**DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE**

A-0007-000334

1.0 INTRODUCTION

In accordance with Section VI.B. of the Interagency Agreement (IAG), this memorandum presents modifications to the Field Sampling Plan (FSP) included within the December 1991 Final Phase I RFI/RI Work Plan for Operable Unit No. 7 (OU 7), Present Landfill IHSS 114 and Inactive Hazardous Waste Storage Area IHSS 203, Rocky Flats Plant, Colorado.

This memorandum addresses modifications to: (1) the frequency of groundwater sampling; (2) the detection limits required for analyses of soil gas collected within IHSS 203; (3) the method for determining the hydraulic conductivity of weathered bedrock below the landfill; (4) the number of boreholes drilled at locations west of IHSS 114; and (5) the number of upgradient monitoring wells.

These modifications to the OU 7 FSP will provide data that meets the Data Quality Objectives (DQOs) defined in the work plan while adhering to the IAG schedule for completion of the OU 7 Phase I RFI/RI. The intent of these modifications is to maximize project efficiency while not impacting DQOs. These modifications and their rationales are discussed below.

2.0 GROUNDWATER SAMPLING FREQUENCY

The FSP specifies that newly installed groundwater monitoring wells will be sampled quarterly during a one-year period to establish statistically significant, site-specific, background values for groundwater quality. As stated in Section 7.2 of the work plan, background groundwater quality will be compared to groundwater quality within and downgradient of OU 7 to better define contaminant sources and the volume and composition of leachate, and to characterize leachate-contaminated materials (including soils, bedrock and East Landfill Pond sediments) underlying the landfill.

Due to scheduling constraints, the frequency of groundwater sampling must be modified. Instead of quarterly groundwater sampling, sampling from the new monitoring wells will be performed on a monthly basis beginning two weeks after development of the last monitoring well installed. Four rounds of groundwater sampling will be performed. The sampling intervals will provide the statistically significant water quality data required for comparisons of water quality.

3.0 SOIL GAS DETECTION LIMITS

As stated in Section 7.2 of the work plan, a soil gas survey will be conducted within IHSS 203 to provide screening-level data (i.e., EPA Level II data) and establish the presence or absence of shallow subsurface volatile organic compounds (VOCs) associated with past hazardous waste storage practices. The proposed soil gas detection limits, listed in Table 7-2 of the work plan, are each 1 microgram per liter (ug/L). However, the 1 ug/L detection limit is appropriate for EPA Level IV data, not Level II data. Because the soil gas survey is designed to obtain screening-level data, detection limits of approximately 1 milligram per liter (mg/L) will be used to determine the presence or absence of shallow, subsurface volatile organic contamination at IHSS 203. Information obtained during the soil gas survey will be used to identify locations where subsurface soil samples will be obtained for laboratory analysis to provide EPA Level IV data.

4.0 BOREHOLE PACKER TESTS

As stated in Section I.B.11.b of the IAG, the purpose of the Phase I RFI/RI for OUs at the Rocky Flats Plant is to characterize contaminant sources and soils. Sources and soils within OU 7 include leachate-contaminated geological materials (i.e., soils, bedrock, East Landfill Pond sediments) that underlie the landfill wastes. Borehole packer tests were included in the FSP to obtain estimates of hydraulic conductivity and better characterize the flow regime within leachate-contaminated geological materials.

Recent experience from other OU field investigations at Rocky Flats indicates that borehole packer tests conducted in geological materials have a low success rate. Slug tests conducted in existing monitoring wells can provide the same hydraulic conductivity data. Slug tests will be performed in accordance with Rocky Flats Standard Operating Procedure GW.04, Slug Testing (EG&G Manual No. 5-21000-OPS).

5.0 BOREHOLE DRILLING WEST OF IHSS 114

The OU 7 work plan specifies that 3 deep boreholes will be drilled west of IHSS 114 to obtain stratigraphic information and samples for laboratory analysis. Laboratory analytical data will be used to establish site-specific background values for borehole samples. Stratigraphic information will be used to construct the cluster wells at each of the three borehole locations. After drilling, the boreholes will be grouted and new boreholes drilled for construction of monitoring wells.

The three deep boreholes are not necessary at this time to achieve these objectives. The stratigraphic data used to construct the groundwater monitoring wells will be obtained during drilling of the initial monitoring well borehole at each location. The site-specific background values for borehole samples can be obtained from one upgradient borehole as opposed to three. Other site specific data is available from previous background geochemical investigations near OU 7. Samples will be collected at 2' intervals in alluvial and colluvial materials and at 5' intervals in weathered bedrock.

6.0 MONITORING WELLS

The strata of the southern upgradient area designated to have monitor well clusters did not include a weathered bedrock unit. Alluvial soils directly overlay unweathered claystone at this location. The work plans calls for three wells in each cluster. Individual wells within the cluster are to be completed in alluvial, weathered bedrock, and unweathered bedrock strata. In the event that weathered bedrock is not encountered or no suitable water bearing zones are identified within 150 feet of the alluvial/bedrock contact, that specific well will not be installed. This will eliminate unnecessary monitoring wells that do not produce water quality samples or produce redundant samples. This will also reduce overall project costs.